RAYAGADA AUTONOMOUS COLLEGE

4th INTERNAL ASSESSMENT

SUBJECT: MATHEMATICAL PHYSICS-III

PAPER-VIII

F.M-15

TIME-1 HOUR

Answer any one of the followings

Q. Derive Cauchy-Riemann equation(necessary condition) for a complex function to be analytic.

Q. Find the Laplace transformation of the following functions

(a). $F(t) = \begin{cases} \sin \omega t, & 0<t<\pi/\omega \\ 0, & \pi/\omega<t<2\pi/\omega \end{cases}$

(b) $F(t) = (e^{at} - \cos bt)/t$

Q. (a)State and explain convolution theorem.

(b)Find the Inverse Laplace transform of the function, $F(t) = \dfrac{S+4}{S(S-1)(S^2+4)}$

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SUB: ELEMENTARY MODERN PHYSICS
PAPER-IX

F.M-15
TIME-1 HOUR

Answer any one of the followings

1 . Describe Compton effect. Describe the expressions for Compton shift.

2 . Write the postulates of Bohr model of atom. Calculate the expressions for the energy of an electron revolving in an orbit.

3. Explain Rutherford's scattering of α-particles. Derive the expression for scattering cross section.

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F.M-15
TIME-1 HOUR
C 3

SUB: ANALOG SYSTEMS AND APPLICATIONS
PAPER-X

Q.1. What is step graded P N junction and how it is formed?

OR

Draw energy band diagram of Germanium and Silicon showing valence band ,conduction band and forbidden band.

Q.2. (a) What is drift velocity? Derive expression for drift velocity of electron. [6+6

(b) What is diffusion ? Derive expressions for total free electron current density and total hole Current density.

OR

[3+6+3

Explain Half wave rectifier with circuit diagram. Derive rectification efficiency and ripple factor .

RAJAGARA (AUTO) COLLEGE, RAYAGADA
+3 SCIENCE 4th SEMESTER
4th INTERNAL EXAM-2019

Sub:- Mathematics(GE-IV)

F.M:- 20 Marks

Answer any four:- 4X5=20

1. Define a group, Subgroup, Order of an element, Order of a Group, permutation.
2. Define Vector Space with example.
3. If S is a nonempty subset of a vector space V, then [S] is the smallest subspace of V containing S.
4. State and prove Lagrange's Interpolation formula for unequal argument.
5. . Given the following table

X :	0	5	10	15	20
F(x):	1.0	1.6	3.8	8.2	15.4

Construct the difference table and compute f(21) by Newtons Backward formula.

RAYAGADA AUTONOMOUS COLLEGE
4th INTERNAL ASSESSMENT

SU3:RENEWABLE ENERGY AND ENERGY HARVESTING
PAPER-SEC-II

F.M-10
TIME-1 HOUR

Answer any one of the followings

Q.1. Write short notes on (a) horizontal axis wind turbine(HAWT)
(b) vertical axis wind turbine(VAWT)

Q.2. Briefly explain origin and production of tidal energy.

Q.3. Write short notes of any one (a) Fossil fuels (b) Nuclear energy